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**Proceedings of the
8th European Conference on
Games Based Learning
University of Applied Sciences
HTW
Berlin
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9-10 October 2014**



Volume One

Edited by

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Dr.-Ing. Carsten Busch

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**Research and Training Center for Culture and
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Students as Producers: Designing Games to Teach Social Science Research Methods and Ethics

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Abstract: In this paper we explore our experiences of a staff-student collaborative project that sought to design games and learning resources that could be used to 'liven-up' research methods and ethics teaching in the social sciences. Final and second year undergraduate social science students were encouraged to reflect on their own experiences of both research methods teaching and the process of doing primary research, in order to design games resources that would be useful for future cohorts of students. The concept of games was applied twofold in the project: the development of the teaching resources was itself set up in a games format: we based our initial workshops on the style of the BBC's "Apprentice" programme in order to come up with ideas for the games resources and to introduce a competitive element into the design process. Two groups of students were given a brief to design a games resource that would 'liven up' social science research methods and ethics teaching. Groups then spent an intensive day working on the brief alongside an academic facilitator before pitching their final game concept in a presentation at the end of the day when a winner was announced. In subsequent workshops students worked collaboratively to further develop both games before piloting them on further groups of students prior to production. The second application of the games concept lay in the development of an actual learning resource to be used in future research methods and ethics teaching. The premise of developing an undergraduate dissertation, its (realistic) design and the potential ethical and methodological problems encountered when doing research underpinned the learning objectives for the games developed. The developed games resources have been introduced into the curriculum to supplement the existing (more traditional) learning and teaching strategies and to add a 'fun' element into research methods teaching. Developing a game-based learning approach themselves has thereby increased students' influence on the design of teaching and learning strategies and helped produce a useful learning resource for future cohorts. The paper highlights the benefits of staff-student collaboration in the design and production of game resources, and in particular, the potential for harnessing students' experiences of teaching and learning through feeding it into curriculum development. The paper also demonstrates the benefits of gamification - through a discussion of the positive student feedback and evaluation received by the developed games,

Keywords: students as producers, gamification, research methods, ethics, collaboration

1. Students as producers

In this paper we explore our experiences of a staff-student collaborative project that sought to design games and learning resources that could be used to 'liven-up' research methods and ethics teaching in the social sciences. The project rationale and design was underpinned by the concept of 'students as producers' and the pedagogical principles that this approach espouses. The concept of students as producers has emerged over the last decade as a critical response to the dominant contemporary construction of 'students as consumers' and is associated with the work of Mike Neary at the University of Lincoln and colleagues working at the Reinvention Centre for Undergraduate Research based at Warwick and Oxford Brookes universities (see Neary, 2008; Neary and Winn, 2009; Neary, 2010; Neary, 2012).

Neary and Winn (2009:193) describe students as producers as:

"Undergraduate students working in collaboration with academics to create work of social importance that is full of academic content and value, while at the same time reinvigorating the university beyond the logic of market economics".

While a full exposition of the students as producers discourse is beyond the scope of this paper (see Neary and Winn, 2009; Neary, 2010 for discussion) several key insights from this model have informed the design and development of the project reported here. Firstly, the students as producer discourse asks us to rethink or reconsider how we teach in Higher Education. In particular it challenges the 'dysfunctional' 'transmission model' of teaching whereby, through the traditional lecture and seminar model, students are cast as passive recipients of academic knowledge transmitted by a lecturer. In its place, students as producers seeks to recast students as active producers of socially useful academic knowledge and in the process acquire key critical, evaluative, problem-solving and research-based skills. Central to this reconstruction of students as active producers is the commitment to problem-based learning (PBL) whereby students work collaboratively to solve problems and reflect on their experiences; this overlaps with, but is also distinct from, enquiry-based learning

(EBL) where learning is driven by the process of enquiry and research-based learning (RBL) where students have the opportunity to be involved in academic research projects in collaboration with academics and are thereby enabled to better connect the theory and practice of research (University of Lincoln, 2012; Kiili, 2007).

These approaches to learning facilitate the development of critical academic and evaluative skills that are necessary to support problem-based and enquiry-based learning and raise the level of traditional student project work (Neary and Winn, 2009). Yet, embedding such approaches to learning in the undergraduate curriculum suggests not only a reconstruction of our image of the student, but also reconstruction of the relationship between students and academics. Here the academic is cast not as the transmitter of knowledge, but as a facilitator of student learning who enables students to take responsibility for directing their own enquiries, and as a collaborator (alongside students) in the co-production of academic knowledge.

The students as producer approach to teaching and learning thus involves:

“finding ways to incorporate student intelligence in the quality processes for teaching and learning activities and involving students in the academic project of the university through collaboration with academics on research projects of real intellectual value” (Neary, 2012:2).

In developing this student-staff collaborative project it was our contention that research methods and ethics teaching in the social sciences is particularly ill-suited to the ‘transmission model’ of teaching and learning. Furthermore, our experience of teaching in such areas tells us that students can often find such teaching (in the transmission context) ‘dry’ or ‘boring’ and struggle to connect theory and practice. Thus in our minds, this makes research methods teaching a prime area for the application of some of the principles of the students as producers discourse, and indeed, ripe for potential gamification. However, in line with the pedagogic principles underpinning the students as producers discourse it was not our intention to redesign the curriculum based on our reflections of our teaching practices. Rather, we asked our students: What are your experiences of teaching and learning research methods and ethics? How can we make teaching more productive? Can we develop a game that might improve teaching for future cohorts of students? However, before we discuss in more detail the design and implementation of the project and its pedagogical outcomes, we first want to explore some of the benefits that can accrue from playing and developing games in an educational context.

2. Games-based learning

Games and simulations¹ are increasingly being used as teaching tools but games, in particular, have a long history of being used by humans. Board games, for instance, have been argued to be simplified coded models of problems that can occur in real life (Ghory, 2004). At a time when most student bodies are increasingly diverse games have been suggested to provide an active learning environment as well as a fun one. A body of literature has grown that considers the pedagogic value of using games-based learning. ‘Serious games’ or educational games are increasingly being developed and used in education settings. However, as Moseley and Whitton (2014) point out, although games are currently enjoying something of a golden period with new game forms appearing every year, *game mechanics* are crucial and need to be at the core of game development. In addition, it appears that many educators are attempting to design digital games and these are fraught with problems such as: demanding considerable technical skill and taking time for development to an acceptable standard for students. The trend towards the development of digital games has led, in their view, to the design of many games that are not fit-for-purpose, not least because the ability to create the games has been taken away from the teacher and the students. In terms of the purpose of using games in teaching there are further warnings that games themselves should not be seen as motivational (Moseley and Whitton, 2012; Whitton and Moseley, 2012), and that students can feel that they devalue the course that they have paid good money for. Games can, nevertheless, make anything fun (Ebner and Holzinger, 2007) and educators should retain a motivation and enthusiasm for their use in appropriate contexts (Moseley and Whitton, 2012).

Bringing the “fun factor” into teaching is itself a potent contributor to the efficacy of games as a teaching tool as students might not necessarily realize that they are involved in a learning activity. In fact, one of our groups of students, when presenting their group’s idea for a game, could not repeat enough the idea of “fun, fun, fun”

¹ Whilst simulations can be defined as scaled down enactments of reality games can be defined as activities carried out by individuals who may cooperate or compete in trying to achieve specific objectives and who, in following particular rules, operate within particular constraints (Horn, 1977).

that they claimed was inherent in their game. Nevertheless, clearly any game-based learning strategy needs to be associated with specific learning objectives or outcomes and tutors should resist creating fragmented and isolated awareness-raising activities. To turn a game used in the class room into game-based learning requires the 'building in' of opportunities for reflection (Cruz and Patterson, 2005; Lichtenwalter and Baker, 2010), which has been hailed by some as the most critical component in game-based learning (Kiili, 2007).

Games may be presented as merely another option within a diversified teaching and learning strategy but their characteristics, such as clear, achievable goals and rules which challenge students, make them a good tool to be used in teaching, particularly when they draw on PBL (problem based learning) which can then be turned into PBG (problem based gaming) (see Kiili, 2007). It has been noted that games can encourage higher levels of student interest and promote positive attitudes towards the subject (Ebner and Holzinger, 2007). They also have cognitive benefits in that, like textbooks, they effectively serve to reinforce or strengthen students' new understandings (Magney, 1990). Games, particularly traditional games (board and card games), are interactive (collaborative and/or competitive) and can be played in safe environments which provide the opportunity to make and learn from, mistakes (Whitton and Moseley, 2012). The interaction and feedback resulting from this process is therefore a key part of the games-based learning environment. Curiosity, permission to fail and engagement with others can provide students with contextual challenges in which they have opportunities to gain a sense of control and power to make judgments and decisions (Knapp, 2012). Collaborative and problem solving skills are thus often emphasized in the skills development that is part of the learning outcomes within games-based learning activities.

Having thus set out briefly both a framework for combining critical pedagogies by adopting a student as producers approach and some ideas around games-based learning, the next section will provide an account of a student-staff collaborative project that adopted a game-based learning approach to the task of developing a learning resource that could be used within the curriculum to improve and 'liven up' research methods teaching. In doing so, the game development process roughly followed the ADDIE model for creating instructions based on a series of interlinked steps which were analysis, design, development, implementation and evaluation (Knapp, 2012).

3. The project

The impetus for this project was provided by the Higher Education Academy who allocated a small pot of funding for academics at Leeds Metropolitan University to work with sociology students on exploring how games might be developed and used within the sociology curriculum. Early discussions amongst the authors identified research methods and ethics teaching as an area that might be particularly relevant for 'gamification' as we believe this area to be ill-suited to the traditional 'transmission model' of teaching and learning. Whilst there are some efforts of using games in research methods teaching, many rely on quizzes in digital formats (see for instance the CHERMUG games, www.chemug.eu) and have been designed by educators. However, our interest in the students as producers pedagogic model led us to focus on *students'* experiences of teaching and learning on research methods and ethics modules and to provide the facilitating framework for them to design and develop appropriate games for future cohorts of research students. Thus, in this model we set up a games based approach for the first workshop in which students competed in two groups to outline the conceptual basis for two games which were then further developed and designed in a second workshop. Central to our approach was a very careful consideration of how we designed the project in order to facilitate the development of games *for* students *by* students.

4. Workshop 1

Involvement in this extra-curricular project was entirely voluntary. Importantly, we invited both second and third year social science students to take part in the project; second years because they were currently taking research methods modules and third years because they had previously undertaken research methods training and had just finished grappling with the problems encountered in doing research in their undergraduate dissertations. The benefits that accrued from mixing different cohorts of social science students were greater than we expected and extolled by students in both cohorts. Second years were delighted to be able to talk to 3rd years about the experience of doing a dissertation, while the 3rd years seemed to revel in passing on their knowledge and experiences to other students. The nature of the learning environment is also highlighted as a key issue in the students as producers discourse (Neary, 2008). The aim underpinning this project was to create a learning environment that fostered student collaboration but with a competitive edge that might

provide extra motivational impetus. Thus we decided that we would loosely base our initial workshop – which was focused on reflecting on students’ experiences of research methods teaching, identifying what needed to change (in the students’ words: make teaching and learning more fun) and designing a game to do that – on the format of the popular reality TV game show “The Apprentice”. In this game show 12 contestants compete to be taken on as the next apprentice by well-known British entrepreneur Alan Sugar. Each week contestants are placed into two groups and are given a brief/task. The group that completes the task most successfully is awarded a ‘treat’, whilst one of the members of the ‘losing’ group is ‘fired’. The process continues week by week until a winner is announced. While we do not concur with all of the principles underpinning the Apprentice format we were particularly attracted to the idea of collective problem-based learning that is inherent in setting a group a brief, task or problem to solve and the competitive edge generated by challenging groups to go up and against one another in the attempt to solve a problem or achieve a task. What emerged was that the students really liked the competitive component and some became very focused on ‘winning’ - on occasion we had to ‘rally them’ in order to steer them back to the underpinning collaborative nature of the brief.

Upon arrival at the initial workshop event (which was staged outside of the normal teaching environment) students were allocated to one of two groups of 9 and each group was provided with an academic facilitator. Students were given a brief team-building task before being presented with the following relatively loose brief:

Aim: for UG students to create a game-based learning approach to methodological and ethical dilemmas in planning and carrying out UG research/dissertations.

- 1) Think of a plethora of difficult areas to research/difficulties encountered in planning empirical research.
- 2) Think of ways of resolving these problems/dilemmas.
- 3) Perhaps consider some generic advice for another UG cohort? Good experiences, bad experiences?
- 4) Create a game/interactive approach for other UG students to use as a resource.

Figure 1: Brief given to students on the first day

Students were told that by the end of the day they would be expected to present their game concept to the whole group and that the whole group would adjudicate on the winning game. After the initial briefing, the structure of the day consisted of separate group workshops whereby the groups worked on their own specific ideas, interspersed with plenary sessions whereby the academic facilitators of each group fed back key or interesting issues generated within their own group. As noted above, this idea of cross-fertilisation between the groups, however, met with some resistance from the students who were less keen on revealing their ideas to their competitors than the group facilitators! The first workshop day morning was spent by the two groups of students brainstorming around their acquired and shared experiences of methodological and ethical problems and issues encountered when doing undergraduate research. As such, students were drawing on their ‘authentic’ experiences, a key principle highlighted in the gamification literature (Kiili, 2007). In the afternoon the two groups worked on thinking about how these problems could be incorporated into a game that could be used as a pedagogical tool in the future in methods modules. The premise for the first day was thus for two groups to come up with two ideas for games resources which could be used to supplement the existing learning and teaching strategies. Providing an incentive to achieve the aims of the day was the promise that, in true “Apprentice style”, a winning and a losing team would be declared after presenting the games concept and that the “winners” would get a “treat” and the “losers” would get to go to a “greasy spoon café”. What we really did was to take all the students to an event space/café where we celebrated our collective achievements.

5. Workshop 2

The first workshop produced the winning game ‘Curveball’. However, both tutors felt that a second concept that got “buried” held great promise so was taken forward for development as well. A second workshop day two months later thus continued the project with the aim of producing a set of three learning objectives to develop the educational content of the games more. The incentive underpinning the second workshop was the opportunity to take any games that were sufficiently developed to the Higher Education Academy conference which was forthcoming. Despite some attrition issues the second workshop assembled enough students who were willing and able to continue working on the project and we also joined up with a design student who came in to help with the production and the design of the games. This second workshop abandoned the competitive component and gave way to the collaborative effort of formulating learning outcomes – which the students found hard but interesting to do – and trialing the games on themselves, in order to revise and

modify. Students, with some help from the tutors, came up with the following. “Roll with it” is based around the difficulty students often face around formulating and finding good dissertation/research questions; “Curveball” is designed around the idea of problem-solving and becoming a reflexive researcher. Below are the descriptions and the learning outcomes as formulated by the students (assisted only by staff).

Game Description:

“Roll with it” is a research methods game for groups of students to get ideas rolling for undergraduate dissertations and to learn to formulate good research questions. Students have to formulate three research questions using the question prompt, the topical area and the research method rolled. Following that is a discussion on the feasibility of this question for an undergraduate dissertation, considering possible ethical and practical issues that may arise and solutions on how to overcome such problems. They then have to present their discussion to the class including a reflection on the construction of good research questions.

Learning Objectives:

Stimulate ideas for possible research questions appropriate for undergraduate dissertations.
Learn how to formulate good research questions.
Develop an understanding of the problems that arise in planning empirical

research.



Figure 2: RollWithIt game description and learning objectives

Game Description:

“Curveball” is a research methods game for groups of students which tests methodological, analytical, and ethical knowledge and understanding of a research project by encouraging problem solving and reflexivity. The aim is for a group to design a research project which considers method of data collection, sampling, and analysis. Throughout this process the group will be ‘thrown’ a number of Curveballs which the group needs to address in relation to the research design. At intervals, the group will present their research project to the class including a brief explanation of the problems/issues which emerged as a result of the Curveballs, and the lessons that have been learnt in the process.

Learning Objectives:

Collective design of a research project within given fields.
Develop an understanding of the methodological and ethical problems that arise in doing empirical research and find solutions.
Develop a reflexive approach towards social research.



Figure 3: Curveball game description and learning objectives

6. Evaluation and reflections

There are multiple ways by which we could evaluate this project. Here our focus is on the evaluation of the games that the students have designed and produced (for testimonies from students involved in this project see <http://blogs.heacademy.ac.uk/social-sciences/2013/07/19/sociology-does-the-apprenticeand-develops-two-games-for-methods-teaching/>). We find it interesting, and indeed instructive, that when given an open opportunity to design games-based learning resources our students produced collaborative games designed to be played in groups. Both games are also premised on a problem-based learning strategy and present players with problems to resolve that mirror typical 'real-life' methodological, practical and ethical issues that are encountered within the research process.

Evaluation has, and continues to be, an ongoing process. In the first instance the student game designers tested the games on each other. Following this students and tutors piloted the games on a group of second year undergraduate research methods students at Leeds Metropolitan University, placing a student game designer in each group playing the games in order to monitor the general playability of the games, how well the players understood the game and the instructions. Detailed notes were taken by the student game designers and fed back into game design, content and development before the games were then more formally trialled and evaluated in external academic institutions.

7. RollWithIt (RWI)

RollWithIt was first trialed with a cohort of 3rd year UG mature students (N=13) by their regular module tutor who provided useful feedback. As the results below indicate, this cohort of students saw clear benefits of using the games in the research methods teaching context, with the vast majority ranking the game as 'very' or 'quite' useful when asked about the learning outcomes.

Table 1: RollWithIt Evaluation November 2013 - University of Leeds 3rd year UG adult learners (N=13)

	Very (%)	Quite (%)	A little (%)	Not (%)
LO1 - How useful is RWI for stimulating ideas about possible research questions appropriate for undergraduate research?	23	69	8	0
LO2 - How helpful is RWI towards learning how to formulate good and doable research questions?	23	77	0	0
LO3 - How useful is RWI in developing an understanding of the problems that arise in planning empirical research?	46	39	15	0

A second trial of RollWithIt at another university produced somewhat different results. The tutors and some of the student game designers put on a seminar to play the games with second year students (N=32). On the whole the data is more varied in relation to the evaluation of meeting the learning outcomes.

Table 2: RollWithIt Evaluation January 2014 - Liverpool John Moores University 2nd year UG students (N=32)

	Very (%)	Quite (%)	A little (%)	Not (%)
LO1 - How useful is RWI for stimulating ideas about possible research questions appropriate for undergraduate research?	9	57	28	6
LO2 - How helpful is RWI towards learning how to formulate good and doable research questions?	9	39	43	9
LO3 - How useful is RWI in developing an understanding of the problems that arise in planning empirical research?	9	31	43	16

Upon reflection, level specific instructions were developed for RollWithIt whose challenges were deemed to be different for second and third year students. However, it might also be the case that having the regular tutor facilitate the game had a more beneficial impact in the first evaluation (we are awaiting further evaluations from tutors who will be using the games in their classes).

8. Curveball

Students and tutors also put on a seminar in order to play and evaluate Curveball. The formal evaluation of Curveball has produced very encouraging data and feedback so far. On all of the questions asked a good majority of the students ranked the games as either 'very' or 'quite' useful.

Table 3: Curveball Evaluation January 2014 - Liverpool John Moores University 2nd year UG students (N=30)

	Very (%)	Quite (%)	A little (%)	Not (%)
How useful did you find the game for your understanding of the research process?	30	50	17	3
LO1 - How useful was Curveball for thinking through the design of a research project within a given field?	40	37	20	3
LO2 - How helpful is Curveball in developing an understanding of the ethical and methodological problems that arise in doing empirical research and finding solutions?	30	43	24	3
LO3 - How useful is Curveball in developing a reflexive approach towards social research?	20	63	14	3

Other strong findings from this evaluation (not shown in table 3) showed that 60% of the student's found the group component of the game 'very useful', while more generally, 92% agreed that the game was a useful learning tool for research methods students. When asked to rate the game (out of 10) Curveball scored a median rating of 8. Although we didn't seek to formally quantify how much fun the student's had whilst playing Curveball in this evaluation, some students did spontaneously offer written comments on our quantitative evaluation sheets. These comments included "very useful it [Curveball] makes you think!", "Really enjoyed! Great way of learning!" and "Learnt the most! Involved and interesting!" Students also offered suggestions for developing Curveball further. Popular here was the idea of developing scorecards to quantify the quality of each group's research design and their responses to the curveballs thrown.

The sample size for the evaluation data is currently rather small, however evaluation and feedback of both games is ongoing and being provided by tutors who have requested the games for use at their institutions (the latest versions of the games are available to be downloaded free of charge but must be self-assembled – contact the authors for further information). Such evaluation and feedback will be fed back into further game development, which will also seek to explore the application of the core game concepts and principles to different academic subject areas. Nonetheless, in our minds, the existing data does provide evidence for the usefulness of the games as a learning resource for UG research methods students. However, it should not be assumed that all students will automatically find such games useful. Clearly, both games depend substantially on the playing context and the tutor-class relationship as well as students' relationship with one another as they are played collectively within the class room. As the tutor using RWI with 3rd years has indicated: 'it's a helpful tool but it's only as good as the people using it'. Similarly, both games rely on the provision of high quality feedback from the tutors facilitating the game. Our current observations and evaluations suggest that learning outcomes are most fruitfully met when the games are played by students with knowledge of the research process (i.e. late second years, towards the end of a research methods module). Final year students may also be used as class room game facilitators with positive results. Our approach to developing these games has been to place the tutor as facilitator and the students as co-producers of knowledge who are actively participating in the learning process. As such we hope that through both the production and playing of the games, we have highlighted some of the pedagogical benefits of the 'students as producers' perspective.

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